

**AMENDMENT AND PETITION FOR  
EXTENSION OF TIME**  
**Patent Application Serial No. 09/909,592**  
**Reply to Office Action Mailed October 1, 2003**  
**Art Unit: 1764**

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**Attorney Docket No.: Case 6152**

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1 - 20 (cancelled)

**Claim 21 (new)** A system for removing a pre-selected amount of carbon dioxide from a gas by dissolving the carbon dioxide in water, the system comprising:

a water intake connected to at least one intake channel which slopes downwardly away from the water intake;

at least one drainage channel;

at least one reaction bed containing buffering agent, positioned between one inlet channel and one drainage channel, having an inlet fluidically connected to the one intake channel and an outlet fluidically connected to the one drainage channel, wherein the inlet is positioned vertically beneath the outlet;

at least one flue gas manifold at least partially submerged within the reaction bed, said manifold connected to a flue gas exhaust of a power plant and said manifold having a series of outlet perforations positioned to emit flue gas into the reaction bed; and

wherein the drainage channels are positioned relative to the intake channels so as to induce water flow through the reaction bed.

**Claim 22 (new)** The system according to claim 21, wherein the buffering agent comprises limestone.

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**Claim 23 (new)** The system according to claim 22, wherein water fills the reaction bed at a height of approximately two-thirds in comparison to the limestone contained in the reaction bed.

**Claim 24 (new)** The system according to claim 22, wherein the limestone is granulated to a diameter determined by a Sauter mean diameter calculation.

**Claim 25 (new)** The system according to claim 21, wherein the water intake is selected from the group consisting of a lake, river, ocean or reservoir.

**Claim 26 (new)** The system according to claim 25, wherein the water flow is induced by gravitational force.

**Claim 27 (new)** The system according to claim 21, wherein the water flow is induced by gravitational force.

**Claim 28 (new)** A system for removing a pre-selected amount of carbon dioxide from flue gas containing the carbon dioxide by dissolving the carbon dioxide in water, the system comprising:

a limestone bed arranged in a plurality of spaced apart limestone bed rows having open rows therebetween which are alternately water inlet channels for providing water into the limestone bed rows and water outlet channels for receiving water from the limestone bed rows, the water inlet channels being defined by walls having means for

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conveying the water into the limestone bed rows and the water outlet channels being defined by walls having means for conveying the water out of the limestone bed rows into the water outlet channels, the differential head defined by the difference in elevation between a water level in the water inlet channel and the water level in the limestone bed rows causing water to flow from the water inlet channels through the limestone bed rows and into the water outlet channels due to the force of gravity;

means for providing the flue gas containing the carbon dioxide into the limestone bed rows and water contained therein so that the flue gas percolates through the limestone and water; and

water supply channel means for providing water into the water inlet channels, and water drain channel means for receiving water from the water outlet channels.

Claim 29 (new)      The system according to claim 28, wherein the means for conveying water into the limestone bed rows comprise a plurality of slots provided at spaced intervals along a bottom length of the walls defining the water inlet channels.

Claim 30 (new)      The system according to claim 28, wherein the means for conveying water out of the limestone bed rows comprise a plurality of passages provided at about 2/3 the height of and at spaced intervals along a length of the walls defining the water outlet channels.

Claim 31 (new)      The system according to claim 28, wherein the water in the water inlet channels is raised to a level of about 50 cm above a liquid level in the limestone bed rows.

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**Claim 32 (new)** The system according to claim 28, wherein the means for providing the flue gas containing the carbon dioxide into the limestone bed rows and water contained therein comprise a plurality of perforated tubes buried in each limestone bed row.

**Claim 33 (new)** The system according to claim 32, comprising a main flue connected to the perforated tubes for providing the flue gas thereto.

**Claim 34 (new)** The system according to claim 28, wherein the water comprises one of fresh water, salt water or a combination thereof.

**Claim 35 (new)** The system according to claim 28, comprising means for pumping water from a water source to the water supply channel means.

**Claim 36 (new)** The system according to claim 35, wherein the water source comprises at least one of a river, lake, ocean, reservoir and condenser cooling water.